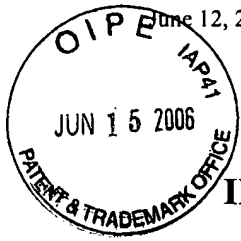


June 12, 2006 (10:17am)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE****In re Application of:** Wolfgang ADERHOLD**Attorneys Docket:** AM-8304**Serial No.:** 10/788,979**Confirmation No.:** 6862**Filed:** February 27, 2004**Art Unit No.:** 3742**Examiner:** S. Fuqua**For:** "BACKSIDE RAPID THERMAL PROCESSING OF PATTERNED WAFERS"

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Commissioner for Patents  
Alexandria, VA 22313-1450

**PRE-APPEAL BRIEF**

Sir:

In conjunction with the filing of a Notice of Appeal and a Pre-Appeal Brief Request for Review, please consider the following remarks.

Claims 1-30 and 37-42 remain in the application.

The Examiner has rejected claims 1, 3, and 6-8 under 35 U.S.C. §103(a) as being anticipated by Samoilov et al. (US Patent 6,455,814, hereafter Samoilov). The Examiner has rejected claims 2, 4, 5, 9, and 12-19 under 35 U.S.C §103(a) as being obvious over Samoilov in view of Ballance et al. (US Patent 6,090,210, hereafter Ballance). Both rejections are believed to be improper.

All the claims recite upside-down thermal processing of substrates. That is, the side of the substrate in which features are formed faces downwardly. Base claim 1 uses the straightforward language of "a front side thereof facing downwardly to form features therein." The language of base claim 12 is more indirect but requires that the "a wafer with a back side

thereof facing said radiant heating apparatus [*sic*, heat source]”, that “a reflector [is] disposed on a side of said wafer facing said front side”, and that the “radiant heat source is disposed above said reflector”.

Ballance uses the standard configuration of a wafer supported on its back side facing a reflector with a front side facing upwardly towards the radiant heat source, which thereby heats the side on which the features are being formed. Samoilov uses a somewhat unstandard (though prior art) configuration of a wafer supported on its back side facing a radiant heat source with a front side facing upwardly towards a reflector.

The Examiner admits that Samoilov does not disclose a front side of the substrate facing downwardly but contends that such an inversion would be obvious “since it has been held that a mere reversal of essential working parts of a device involves only routine skill in the art.” The Examiner cites no law for this potentially very broad assertion. Applicants assert that the reversal of the orientation of Samoilov is not routine and is hence unobvious.

Samoilov’s wafer 116 is gravitationally supported on either his susceptor 106 or lift pins 105 (col. 3, lines 21-27). Samoilov does not clearly illustrate the size of the susceptor 106; however, his description at col. 3, lines 38-44 that the backside of the wafer is conductively heated from the susceptor and that light leakage to the front side must be minimized indicates that the susceptor extends over the entire wafer area. If Samoilov’s radiant heating chamber were inverted in total, the chamber would be inoperable for its intended purpose because the wafer 116 would fall off the susceptor or lift pins and strike the inverted reflector 128, clearly an undesired and inoperable result. If the wafer 116 only were inverted, contrary to the teachings of Samoilov, then all of the features being developed on the wafer front side would rest on the wide-area susceptor. While the wafer might be effectively heated in this arrangement, the fine integrated circuit features would be greatly harmed. That is, no reasonable mechanic would support the front side of the wafer on a large susceptor since virtually no useful devices would be produced by the process.

To render Samoilov’s inverted chamber or wafer operable in either of these situations would require substantial changes to Samoilov’s chamber unsuggested in the art applied by the

Examiner. The applied art is not enabling under 35 U.S.C. §112 for the changes required to allow the pending claims to read upon it.

Claims 3, 4, 13, 14, 17, and 18 recite the limitation of supporting the wafer in its edge exclusion zone, a term that is not even described in the applied art. Hence, the limitation cannot be held to be obvious over the applied art. However, the Examiner contends that 3mm edge exclusion zones are well known, which of course they are, and concludes that it would be obvious to support the wafer in the edge exclusion zone. The Examiner's conclusory determination fails to address the lack of prior art of supporting a wafer's front side only within the edge exclusion zone. The Examiner further fails to cite any prior art for any type of support on the wafer's front side.

The Examiner's attempt to reverse engineer the invention amounts to unpermitted hindsight. The extensive semiconductor industry has apparently previously failed over more than a decade to suggest supporting the wafer in its edge exclusion zone in radiant processing equipment so that the obviousness of such support clearly was not evident to the large number of engineers in the industry.

Further arguments are available but will be reserved for the more extensive appeal brief if required.

Respectfully submitted,

Date: \_\_\_\_\_  
Correspondence Address  
Customer Number: 60,300  
Law Offices of Charles Guenzer  
P.O. Box 60729  
Palo Alto, CA 94306

Charles S. Guenzer  
Registration No. 30,640  
(650) 566-8040



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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number (Optional)

AM-8304

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on June 12, 2006

Signature

Typed or printed

name Ingrid C. Mallory

Application Number

10/788,979

Filed

February 27, 2004

First Named Inventor

Wolfgang ADERHOLD

Art Unit

3742

Examiner

S. Fuqua

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.☐ assignee of record of the entire interest.See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)☒ attorney or agent of record.Registration number 30,640☐ attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34 \_\_\_\_\_

Signature

Charles S. Guenzer

Typed or printed name

(650) 566-8040

Telephone number

June 12, 2006

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.  
Submit multiple forms if more than one signature is required, see below\*.\*Total of 2 forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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